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will of the people. I have only exercised the constitutional right and fulfilled the duty of a citizen in petitioning the government to enact legislation which I believe to be in the interest of the nation. For this I am dismissed from the division of philosophy, psychology and anthropology, which I have made the strongest in the world. Professors in every university are terrorized, so that they dare not exert their influence for peace and good will.

The people of all the European nations long for peace, but are kept at war by the kleptocratic classes. In spite of the institutions and the instincts which we have inherited from a barbarous past, I believe that our people have no heart for this war into which they have been driven. But even if the nation should become a mob mad for war, it is none the less the business of each of us to do what he can for righteousness as he sees it. If that is forbid by force, then indeed we need a new national anthem, such as Shelley once wrote for England:

God prosper, speed and save,
God raise from England's grave
Her murdered Queen!
Pave with swift victory
The steps of Liberty,
Whom Britons own to be
Immortal Queen.

—J. MCKEEN CATTELL *in a statement
printed in the daily press.*

SCIENTIFIC BOOKS

Chemistry in the Service of Man. By ALEXANDER FINDLAY, M.A., D.Sc., F.I.C. Longmans, Green & Co., London, New York. 1916. Pp. xiv + 255. Price \$1.60.

This book is the outgrowth of a series of lectures—the Thomson Lectures—delivered by the author before the United Free Church College at Aberdeen, near the close of the year 1915. It represents the attempt to lay before a group of college men, who made no claim to chemical knowledge, some account of what chemistry has accomplished for the well-being and uplift of mankind, and also some glimpse of the relation of chemistry to the war. The

book is in England especially timely, from the fact that among the educated classes, as well as among the business men and industrialists, an appreciation of chemistry has been sadly wanting. The case is somewhat different in this country, since for many years chemistry in a large share of our colleges and universities has been either a required study or a widely chosen elective, and has become a part of the curriculum of most of our high schools. Probably on account of this our manufacturers have shown far less reluctance than those of England to abandon their "rule of thumb" methods.

Such books as the one before us are always timely, never more so than to-day, provided the author is a master of his subject and at the same time capable of expressing his thought in language that can be understood by the man with little or no previous knowledge of chemistry. Dr. Findlay well fulfils both of these conditions. His work in physical chemistry is well known; his success in opening up difficult fields in chemistry to the comprehension of the ordinary chemist is evidenced by the clearness of his "Phase rule and its applications" and his "Physical chemistry and its applications in medical and biological science." This latter book, by the way, should be read by every medical student.

The aim of "Chemistry in the service of man" is best set forth in a sentence in the introductory lecture: "In attempting a brief and necessarily incomplete survey of chemistry in the service of man, I shall endeavor not merely to recount some of the manifold ways in which chemistry has revolutionized life and has contributed, on the material side, to a civilized existence; but I shall try, also, to indicate, if I can not do more, some of the principles which underlie chemical change, and some part of the contribution which chemistry has made to our knowledge of the constitution of matter." The latter is rather an ambitious program for a popular book, intended for readers without previous knowledge of chemistry. The chapters entitled "Velocity of reaction and catalysis," "Electricity and chemistry," "The colloidal state," and "Molecular structure" would

hardly seem fitted for *popular* perusal, and yet so clearly are the fundamental principles treated that any intelligent man, or high-school scholar, for that matter, would hardly fail to be understandingly interested in the application of these principles to important facts of every-day life. The consideration of catalysis leads to its application in the manufacture of sulfuric acid and the hardening of fats, and to some of the facts concerned with digestion; in connection with electricity are discussed the refining of metals, the manufacture of chlorin and caustic soda, and many electric-furnace products; the colloidal state is illustrated by photographic plates, the sedimentation of rivers, plasticity of clay, dyeing and water and sewage purification. Perhaps the most interesting chapter is that concerned with the fixation of nitrogen, particularly applicable to the demand, both for munitions and for fertilizers, at the present time. Other chapters are "Combustion, and the production of fire," "The chemistry of illuminants," "Energy, fuel and explosives," "Cellulose and cellulose products," "Glass, soda, soap," and "Synthetic chemistry." All are exceedingly readable, and are to be recommended, not only to the man who desires to get a glimpse of what modern chemistry is doing for the comfort and needs of life, but quite as well to the first-year student of chemistry, in school or in college, who has far too often come to regard the study as a mass of unconnected facts and abstruse theories, mingled with a mess of dirty test tubes and beakers. In this book one gains a glimpse of the beauty of it all, if indeed one has any comprehension of beauty.

One word remains to be said. Many of us were trained in our earlier years to believe that for the past half century all chemistry was "made in Germany," and in this there was far more of truth than of fiction. And yet it is hardly an exaggeration to say that in England, America and France more progress has been made in the past thirty-six months than had been made in Germany in the previous thirty-six years. Perhaps the same has been true of Germany; our information regarding this is meager. As never before, chemistry is

"coming to her own," and hence the timeliness of Dr. Findlay's "Chemistry in the service of man."

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Ulugh Beg's Catalogue of Stars. By EDWARD BALL KNOBEL. Carnegie Institution of Washington, Publication No. 250. 1917. Pp. 109.

Mr. Knobel's compilation of Ulugh Beg's Catalogue forms a fitting sequel to Ptolemy's Catalogue of Stars, also edited by Mr. Knobel in conjunction with Dr. C. H. F. Peters. Ulugh Beg, born in 1394, succeeded his father as ruler of Persia in 1447. Two years later he was killed by his son. He devoted much of his time to astronomy, was the founder of an observatory at Samarkand, which is located in the southern part of Russian Turkestan, and in the year 1437 published a catalogue of stars.

Such catalogues furnish at best only rough determinations of stellar positions because of a number of causes. To add to the insecurity of the positions, it is not always certain whether all the stars of such a catalogue have been directly observed by the author, or whether, for the sake of completeness he has added star positions determined by predecessors, and reduced to the epoch of his own catalogue in a manner unrecorded. Added to this is the doubt whether the manuscripts available contain a true record of the original catalogue.

While it is eminently worth while to preserve such a catalogue, if only for historical purposes, great care should be taken not to place too great dependence upon its star positions.

Mr. Knobel has apparently made a thorough investigation of the subject. In addition to the catalogue proper he has included a comparison of Ulugh Beg's star positions with positions reduced from Piazzi's catalogue, with the exception of 300 stars whose positions were reduced from the catalogues of Danckwörtt and Neugebauer. Following the comparisons he has collated the manuscripts which were examined, and closes the volume with a vocabulary of Persian words prepared